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ABSTRACT

Children's understanding of a first order false belief was compared with their understanding of a third order embedding of mental states, defined as "an intention about a false belief about an intention." Subjects were 72 Canadian middle-class children who were 3, 4, or 5 years of age. Materials were playfigures of a mother, little boy, girl, friend, and a toy playhouse. Each subject was presented with four scenarios involving the playfigures in the playhouse. Two scenarios assessed understanding of a higher order belief and two assessed understanding of a first order belief. Findings indicated that tasks that involved a third order embedding of mental states were no more difficult for preschoolers to understand than were tasks involving the false belief alone. Findings also supported the notion that intentions and beliefs do not pose the same representational problems. While a false belief must be construed as a representation, an intention may be interpreted simply as a link between a person and an object. It is concluded that an analysis in terms of the number of levels of mental states seems to be simplistic. (RH)

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FIRST ORDER BELIEFS AND HIGHER ORDER INTENTIONS: WANTING TO AND WANTING THAT.

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Abstract

In this study, 3-, 4- and 5-year old children understood a third order embedding of mental states (an intention about a false belief about an intention) at the same time as they understood the first order false belief on its own. The findings support the notion that intentions and beliefs do not pose the same representational problems. While a false belief must be explicitly construed as a representation, an intention may be interpreted simply as a link between a person and an object. Children's difficulties lie in the representational complexities of a false belief rather than in the embedding of mental state verbs in general.

Introduction

Perner (1988) proposed that children become proficient at understanding higher order or embedded mental states 2 years later than first order mental states. His tasks dealt only with beliefs about beliefs, but he suggested that the understanding of intentions about beliefs falls within the same developmental category. There is evidence, however, that first order intentions (or desires) are easier than first order beliefs. Furthermore, Leekam (1989) found that children as young as 4-and 5-years-old could distinguish lies from jokes and did so by attributing second order mental states of the kind: Boy did not *want* mother to *know*. It is possible that the critical distinction is not the number of *embeddings* of mental states verbs but differing *representational* requirements of the different mental states.

If understanding an intention does not involve the same representational complexity as a false belief, then young children may not have difficulty with even a *third* order intention. In the present study, children's understanding of a first order false belief is directly compared with their understanding of a third order embedding - an intention about a belief about an intention.

Method

Subjects were 72 Canadian middle-class children, 24 aged 3 years, (range 3;2 to 3;11, mean 3;6), 24 aged 4 years (range 4;1 to 4;11, mean 4;4), and 24 aged 5 years (range 5;1 to 5;11, mean 5;7).

Materials were playfigures (mother, little boy, girl, friend) and a playhouse equipped with toy furniture. Each subject was individually presented with four scenarios regarding the characters in the playhouse, two scenarios assessing understanding of a higher order belief, (an intention about a belief about an intention) and a matching two which assessed understanding of a first order belief.

For instance, one of these higher order tasks experimentally reproduced a conversation which had occurred in a naturalistic setting:

Jeremy (aged 3): Mommy, go out of the kitchen.

Mother: Why must I go out of the kitchen?

Jeremy: Because I want to take a cookie.

Using the playfigures and playhouse, the dialogue between the mother and child was enacted. In response to the Mother-playfigure's question, "Why must I go out of the kitchen?" each subject was asked what they thought the little boy would answer. Predicting that the little boy will conceal his intentions involves the comprehension of a third order mental state: The boy *wants* mother not to *think* he's *intending* to take a cookie. In the other higher order task the little girl begins to go downstairs with the intention of eating "Friend's" gingerbread man (which Friend had stipulated was being saved for later). Friend asks her where she's going, and the subject's task is to predict what the "naughty little girl will say". If the subject reveals the little girl's intention, as in responses such as, "I going to eat your gingerbread," the answer is scored as incorrect.

In counterbalanced order, the matching *first order* scenario was presented. For instance, in the gingerbread scenario this involved the little girl eating Friend's gingerbread man while Friend is obliviously playing upstairs. It is emphasized to the subject that Friend "does not know she's eating the gingerbread man" and the subject is asked to predict whether Friend acts to stop her. This involves the understanding of only a first order mental state: Friend does not *think* the little girl is taking the gingerbread man.

Results

On each condition, that is, first order versus higher order understanding, each subject received a score of 2 (for both tasks correct), 1 (if one of the tasks was correct) or 0 (neither correct). As can be seen in Table 1, the scores of most of the subjects were the

same on both conditions. Of those who obtained different scores, there was no significant difference between the conditions (Chi-square = 1.83, d.f. = 3, p> .05). Subjects understood tasks that involved higher order embeddings of intentions at the same time as they understood a first order false belief.

Performance on both conditions was similar to previous studies assessing the understanding of a first order false belief. As can be seen in Table 2, most 3-year-olds could do neither of the tasks on each condition (83% simply revealed the character's intention on both of the higher order tasks, and 75% similarily scored zero on the first order tasks), whereas most 5-year-olds could do *both* of the tasks in each condition (79% were correct on both higher order tasks and 75% on both first order tasks). In each condition about half of the 4-year-olds were successful on both tasks (46% were correct on both higher order tasks, 54% on both first order tasks). There were no sex differences.

Conclusions

This study showed that tasks which involved a third order embedding of mental states (an *intention* about a false *belief* about an *intention*) are no more difficult for preschoolers to understand than tasks involving the false belief alone. It seems that an analysis in terms of number of levels of mental states is simplistic.

Perner (1991) has subsequently reanalysed the complexity of mental states in terms of whether or not they have to be construed as mental representations or even made explicit. Beliefs and intentions present different representational problems. Only beliefs have both a content and a referent. One can believe X (the content) when it is really Y (the referent or real situation in the world). On the other hand, desires have a content (one can desire X) but no corresponding referent. Therefore, unlike beliefs, there is no possibility of misrepresentation.

An intention may not involve a propositional attitude at all. The statement, "I want to take a cookie", is intentional, but it is not a proposition. It need not be construed as a representation but may be interpreted simply as a link between a person and an object. It is the difference between wanting that.. or simply wanting to..

In showing that embedding intentions, as distinct from beliefs, poses little difficulty for the preschooler, the present study provides evidence that the child's difficulty lies in the representational complexities of a false belief rather than in an understanding of embedded mental states in general.

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Table 1.
Number of subjects who did better on the first order condition; higher order condition; or scored the same on both conditions.

Age	First order	Higher order	Same	n
3 years	5	2	17	24
4 years	8	5	11	24
5 years	3	5	16	24
Total	16	12	44	72

Table 2.
Number of subjects scoring 2, 1, or 0 on the first order condition versus the higher order condition.

	First order			Higher order		
	Scores			Scores		
Age	2	1	0	2	1	0
3 years	3	3	18	1	3	20
4 years	13	6	5	11	3	10
5 years	18	2	4	19	3	2
Total	34	10	27	31	9	32